Outlasting The Enemy

WHEN a nation enters upon a war, it embarks upon a policy of production, manufacture and distribution and destruction of its resources on the one hand and a policy of conservation and preservation of its resources on the other.

A nation at war is like unto a family whose wage earners and supporters have left the homestead, leaving the family to live on the accumulated wealth saved during normal years.

The productive manpower of the United States has left its peacetime pursuits and is concentrating on fighting for the nation's liberty.

It therefore behooves us who must remain in civilian life to conserve our resources and make them outlast those of the common enemy, for as soon as civilian needs begin to cut into military needs then the efficiency of our fighting forces is impaired, and the enemy will have struck a crippling blow at our vitals.

Rubber on *civilian* cars must last for the *DURATION* just as the food of the family whose wage earners have gone away must last until larders can be replenished.

How long is the DURATION? Long enough to outlast our enemies. How long is this? The length of time it takes our fighting forces to bring the full weight of our resources upon the enemy in battle and that will be determined by how soon civilians achieve the maximum of conservation of materials vital to the war effort.

Traffic Engineers know that by facts they have sold the public on the wisdom and economy of installing traffic control devices to save lives. Let us now through traffic factual analysis on tires and travel demonstrate scientific methods of conservation and save our liberty by staving off the day when civilian needs must draw upon our military needs or in other words lower our productive capacity and resultant fighting efficiency which is the same thing and does *not* spell VICTORY.

Leslie Williams

Editor, Traffic Engineering

VOLUME XII SEPTEMBER, 1942 NUMBER 17

PRESENT EDUCATIONAL AND ENFORCEMENT OBLIGATIONS

by SIDNEY J. WILLIAMS

THE war emergency has presented to the builders and operators of our highway transport system a larger, more complex problem than any of us had ever imagined. We must—

1. Move unprecedented quantities of materials to and from war industry plants;
2. Move millions of workers to and from these plants daily, 20 to 50 miles in many cases;
3. Handle all kinds of military traffic —normal supply trucks, soldiers on leave, troop movements in maneuvers and in combat areas, and keep civilian traffic out of the way of the latter;
4. Get along with practically no money for new construction and as little as possible for maintenance and enforcement;
5. Face increasing shortage and deterioration of vehicles and tires; and despite all this,
6. Protect our manpower, rolling stock and goods against destruction by traffic accidents.

Assume one E, Engineering, is "out" for the duration, what can we do with Education and Enforcement?

The Engineer's Part. Of course, traffic engineering is not "out." Limited funds must be spent wisely on access roads and on minor improvements to alleviate the bottlenecks on war-load highways and streets. There is more need than ever for signs, markings and other inexpensive devices for telling the driver exactly what lies ahead and what we want him to do. Certainly there is more need than ever for the most careful studying of traffic and accident data and for shrewd, far-sighted planning. We must depend on traffic engineers for most of the analysis and the planning on which any effective enforcement or educational program must rest. Some of this planning must be of a very high order, embracing production and housing as well as traffic problems of the greatest magnitude.

As soon as we know what we want, we must TELL THE PUBLIC! Tell them exactly what each traffic problem is, what plans are prepared, and how they can cooperate. In fact, "citizen cooperation" may be a better term than "education" because, today, the citizens are quite as eager to cooperate as we are to "educate" them.

Specific Measures. Here are a few of the more important ones generally agreed upon in national discussion:

Staggering of working hours.

Pooling of private cars by workers.

Limited shopping and similar errands to non-rush hours.

Avoiding areas of traffic concentration, by non-defense traffic.

Planning, marking and publicizing preferred routes for defense workers and by-pass routes around congested areas for non-defense traffic.

Special parking prohibitions or limitations on roads carrying heavy war traffic.

Planning and publicizing parking arrangements for employees of large plants.

Attention by employers to "off the job" traffic accidents of employees, which last year took 19,000 lives, more than all the lives lost while actually at work.

I am omitting equally important items of a purely engineering nature such as maintenance of vital highways, safety lighting at points of heavy night traffic and so on.

Speed Restriction. The newspapers are full of rumors and discussions regarding drastic speed limitation, as low as 30 miles an hour even on the open road. Most of these proposals have come from men outside the traffic field and I fear they are not too realistic. To those of us who have fought for years against reckless and dangerous speeding, begging the public to be content with 50 or 60 miles an hour and urging police and courts to enforce existing laws, the sudden demands for a limit of 30 or 35 seems to approach war hysteria.

There can be little doubt that (1) very high speeds are still hazardous to life, to the vehicle and to the tires; (2) former normal speeds should be reduced somewhat in the interest of tire conservation and (3) most drivers will do this voluntarily for their own sakes, especially if we give them accurate figures on tire wear. It is equally true that an army officer or a production executive on important business should not be limited to an arbitrarily low speed. It is just the old question of balance between need and cost. I believe speed restriction will come voluntarily and through education, plus normal police action against reckless speeders.

Tire Rationing. This represents an obstacle in our educational work. A surprisingly large number of people seem to be assuming that the whole traffic problem has been solved because some pleasure driving will be discontinued.

There are no data as yet on which to estimate present, let alone future vehicle mileage. Pleasure driving will undoubtedly be curtailed; so will some business driving through the pooling of cars and otherwise. Truck and bus travel will undoubtedly increase. If mileage should fall off 21% we should merely be back to 1937 which produced nearly 40,000 deaths. Furthermore, any reduction in traffic volume will be offset by the increased hazards of older cars and tires, replacement and maintenance difficulties, much driving in unfamiliar territory, lack of money for engineering and police work, and the inevitable "here today, gone tomorrow" war psychology. If officials, commercial fleets and the public relax their watchfulness, accidents may well increase at the very time when man-power and equipment are so precious.

Enforcement. In all these measures, enforcement obviously has a vital part —to mop up the small minority who are immune to any other type of persuasion.

Police must learn to accomplish as much or more, with the same or smaller resources, through increased efficiency and devotion. It is fortunate indeed that the last few years have seen general recognition of traffic police work as a profession, parallel to traffic engineering. More state and city police departments than ever before have well organized, well trained traffic forces. More traffic courts than ever before now understand what their job is and are trying to do it. Gains will be held, and further progress made, only as public opinion is solidly mobilized behind efficient, impartial enforcement.

An abstract of a paper presented at the 28th Annual Highway Conference at the University of Michigan by Sidney J. Williams (Mem. I.T.E.), Director, Public Safety Division, National Safety Council, Feb. 1942.

TRAFFIC OBSERVATIONS IN 35 STATES

by STUART C. HAWLEY

THE thought occurs to the writer that perhaps the comparison of current traffic conditions throughout the country with those of the summer of 1941 will be of interest to the I.T.E. Membership. The observations were made on a ten weeks' trip on which twenty-two states were traversed by motor and the larger towns and capitals of thirteen others were visited by train or bus. As this same area has been covered each summer for the past fourteen years the basis of these observations is fairly well founded.

Traffic Volume: There are more automobiles on the roads, everywhere, than one would expect, although the majority of the traffic is intra-state rather than inter-state. The exception is near army camps, flying fields, munition manufacturing centers, naval bases and kindred locations. In these areas one sees numerous out-state licensed cars belonging to persons recently moved into those localities.

Speed: There is very little reduction of the former average speed at which cars were traveling in and near the larger towns. On the roads between larger towns; in the rural sections; in and between smaller towns a car traveling at greater than a forty-five mile speed was the exception rather than the rule.

During the trip the writer kept one or more tallies each day, which show that outside of the larger towns the higher speeds were maintained (a) by women either alone or driving others—60%; (b) young people—30%; (c) men, driving alone—10%. The (a) classification was particularly noticeable in and near army establishments—the driven cars generally bearing out-state registration plates.

Numerous signs and billboards have been erected throughout the country urging slower speeds for conservation of tires. They bear concise and elaborate messages. The only ones that seemed to be achieving the desired results were those in Arizona, normally an extremely high-speed state. The Highway Department has designed signs, white letters on black background stating WAR SPEED 40. These signs are economical and erected at frequent intervals. The writer drove the three heaviest traveled roads of Arizona without observing many cars traveling over forty-five.

Regarding the forty mile speed: Generally speaking the 40 m.p.h. was not observed. Numerous drivers were questioned, the consensus of opinion being that the modern automobile does not handle as easily at forty as at forty-five. It is known that the overdrive in certain cars and busses will not function under forty-five. If the theory of marking the speed at forty with a five mile tolerance is to obtain, that is one thing, but if a maximum speed of/for which enforcement is intended, then it should be set and marked at forty-five and more drivers will observe it.

Character of Traffic: The traffic problem in large towns throughout the country is being complicated by an increase in the number of horse-drawn vehicles. Under existing conditions there is every reason to expect a continued increase of this type of traffic; in some places existing Ordinances prohibiting horse-drawn vehicles on certain streets are scheduled to be suspended for the War's duration.

Pedestrians: The control of pedestrian traffic appears increasingly difficult, especially in those areas where there is a decrease in the use of auto-

mobiles. The walkers seem to be taking greater chances because there are fewer cars on the road.

No Passing Zones: In the writer's opinion the only advance or improvement in the marking of NO PASSING Zones is the method adopted in Missouri. They are moving the barrier stripe from its former position immediately adjacent to the centerline stripe to a position half-way between the center line stripe and the edge of the pavement; that is, out into the center of the lane.

The obvious advantage is that the paint will last longer as the cars' left wheels will not be continually running on the stripe. Many Institute members will recall that, when following another car on a two, three, or multiple lane highway, the drivers of preceding cars automatically centered their car on the painted strip—whatever its nature or purpose.

The writer followed a number of cars, in Missouri, turning around several times in order to do so, noting that in every instance the car ahead was somewhere near centered on the yellow barrier stripe and that the clear way between cars passing in opposite directions was several times that of the clearway between those cars passing where the barrier stripe was adjacent to the center line. It is recommended that the Missouri method be given thorough trial in every state, both as a measure of safety and economy.

Group Riding: Inquiry here and there of those in charge of the ride-sharing program brings the information (although no one will be quoted) that the effort will eventually be wholly successful but, up to now, the results are disheartening. While some communities and some individual groups are co-operating in every possible way a breakdown comes after a short time due to loss of interest, selfishness of members or mechanical trouble of a group member's car. Some communities found that there was little conservation of tires because the workers' families were using the family car through the day.

An original article by Stuart C. Hawley (Affil. I.T.E.), Director, Texaco National Road Reports; Texaco Touring Service, The Texas Company, 135 East 42nd St., New York City.

FIVE STAGES OF SWAP-RIDE

by MAXWELL HALSEY

SWAP-RIDE was started with the factory groups *first*. They represented the largest groups (in most cases), could be handled most easily and quickly from the administrative point of view and the tires of war production workers rightfully should receive first attention.

But it is important to realize that when swap-ride has been completely arranged in factories, the total conservation job is a long way from being completed. This is true because the mileage consumed by war workers in commuting from home to work is probably only 20% of the total mileage consumed by all residents of the community. Thus, as soon as the factory stage has been completed, the next two stages should be undertaken.

The larger stores and office buildings may be treated in about the same manner as the factories. Each block in the business district having smaller business units may be treated as a factory, thus considering each smaller unit as a department of a factory.

The third stage of swap-ride deals with the residential districts. Stages one and two approach the problem

from the location of occupation (where the worker works). The third stage of swap-ride deals with the problem from the point of view of where the worker lives. Stage three will catch many persons missed by stages one and two (those cases where the workers could not find men in their building who live close enough to them or on their route).

Stage three should be approached on a block basis—having one man in each block be responsible for contacting every worker in each block, getting the swap-ride information and then helping to form the groups. After the information for each block has been obtained, it will be necessary for the block-men to hold a meeting with the block-men in the zone or district (the same geographical area as used in the factory swap-ride questionnaires). The groups for each zone could then be formed, composed of those persons who have not already been made a part of a swap-ride group on a factory or downtown basis. Care should be taken not to upset any group already formed.

When you are ready for stage three of the swap-ride plan, hold a conference with a Defense Council representative and work out the plan with him, utilizing his fire protection or sabotage organization. It will not be possible to utilize the air-raid wardens on the swap-ride plan because they should not be distracted from their very important assignment.

Stage four of swap-ride deals with the establishment of "swap-ride centers" in sub-business areas, sub-divisions and in outlying areas. These may be in a grocery store, a barber shop, a filling station, etc. These centers will catch and put together into groups many persons who were unable to get together on a zone, district or factory basis, people who live in sparsely settled areas or who, while not close enough on a work or residence basis, can very well get together on a *route* basis. This "get acquainted community arrangement" should round out the area and route possibilities of swap-ride groups.

It should be pointed out, however, that all of the first four stages of swap-ride deal primarily with commuting from home to work and does not affect other driving. But the total commuting mileage is only a small part of the total mileage. Thus stage five of swap-ride deals with all mileage other than commuting mileage. It approaches the swap-ride problem from a functional or "purpose of trip" point of view. This would cover such uses of the automobile as: Retail store shopping; Buying groceries; Going to the drug store; Going to church; Attending club meetings; Going to the club, the lake or the mountains. These items at the present time probably use up more tire miles than does commuting, but they are harder to get at because they do not occur on a daily basis at a regular hour. On the other hand, if successful arrangements are made to keep 3 out of 4 workers' cars at home by commuting swap-ride, not much has been gained if the savings are used up by the workers' family or by himself when he is not at work. Stage five can be promoted by such groups as social and service organizations, community clubs, churches, block representatives, etc., to arrange for all of these non-commuting arrangements to be made on a swap-ride basis. The simplest example is shopping. Why should 10 housewives living in one block each go shopping in their separate cars, one in a car, when it could easily be arranged by telephone to have 4 housewives shop in one car and rotate the cars? The grocery stores, department stores, etc., can assist by urging their customers to swap-ride.

Contributed by Maxwell N. Halsey (Mem. I.T.E.), Executive Secretary, Michigan State Safety Commission, Lansing, Michigan.

CONSERVATION OF VITAL WAR TRANSPORTATION

by ALVIN B. BARBER

THE conservation of vital war transportation is necessary not alone in the use of private automobiles. It extends to all transportation which, directly or indirectly, can contribute to the saving of rubber. It is being applied to the Army and Navy's own equipment. It is likewise being applied to buses and trucks and to other commercial uses of rubber.

There are three ways for economy in passenger transportation: (1) Reduce the travel in vehicles—walk or do not go at all; (2) make the maximum use of vehicles not involving rubber and vehicles requiring the least rubber wear for a given number of passenger miles—that is, fill up the rail cars and buses; and (3) utilize with utmost economy the remaining mileage available in the passenger automobiles and tires.

I recently saw some figures indicating the relative consumption of rubber on buses and private passenger cars. This estimate indicated that under average conditions a bus gives about 2000 passenger-miles per pound of rubber and that under favorable conditions this may reach as high as 7000 passenger-miles. On the other hand, a private automobile, with 1.7 passengers per car, gives less than 600 passenger-miles per pound of rubber. If, by doubling up, an average of 3.4 people ride in a car, then nearly 1200 passenger-miles would be produced by a pound of rubber. But only if all cars were loaded to capacity of five to six people, which as a practical matter cannot be hoped for, would the delivery of passenger-miles per pound of rubber approach even the lowest average estimate for the bus. From the economy measures mentioned there is apparent the outline of a conservative policy on which all will agree.

There are at present two main phases of the conservation movement, first, that of organization and, second, that of technical procedure.

Official Organization: The Office of Defense Transportation, having a wide responsibility in this and other branches of the transportation field, was set up in December to meet the growing needs. It created a Division of Local Transport. This Division announced policies for a conservation program covering both individual and mass transportation. The portion of this program relating to staggering of work hours, group riding in private automobiles and improved traffic control is entrusted for promotion and development to the Highway Traffic Advisory Committee to the War Department.

In the official channel the Governor of each state was requested by ODT to cooperate by appointing a state administrator of the program, it being suggested that he be the chairman of the State Highway Traffic Advisory Committee to the War Department. The state function is to promote local action and furnish technical assistance. The mayors of all cities were requested to appoint local administrators. Civilian defense councils have been asked to assist.

Technical Procedure: As to technical procedure for the conservation campaign, there is now much material available, including the United States Chamber's three reports, *Staggered Hours,* November, 1941; *Staggered Hours—Supplementary Report,* February, 1942; and *Local Passenger Transport,* April, 1942.

Recently two official publications have become available which furnish an authoritative basis for the conservation campaign. These are: *Conser-*

vation of Vital War Transportation—Outline of Procedure and Methods, published by the Office of Defense Transportation, Division of Local Transport, and *Twelve Point Program for All Operators of Street Cars and Buses and All Public Authorities Having Regulatory Power Over Such Operators,* issued by the Office of Defense Transportation.

Mention should be made of several other studies of interest to any one going deeply into the conservation problem.

A report, *War Production Transport,* by a Committee of the Institute of Traffic Engineers, which appeared in the Institute's magazine "Traffic Engineering" for April, 1942, is available in reprint form. This report is generally similar to ODT's *Conservation of Vital War Transportation* but gives more details.

Another study which has contributed to the conservation movement is that commonly referred to as the "Pontiac" or "Michigan" Plan. It is outlined in an extensively illustrated promotional brochure entitled *A Plan for the Conservation of Vital War Transportation* published by the Automotive Safety Foundation.

Staggered-Hours Technique: As is frequently found in dealing with economic or technical problems, solutions for staggered-hour problems are usually fairly simple. The difficulty is to determine what particular remedies are fairly obvious and extensive investigations would be a waste of time. Action should be suited to the actual circumstances.

One of the most striking cases, which furnishes a good model for large war-production establishments, is that of a large war-production plant located about ten miles outside of Minneapolis. Here during the construction of the plant and the early stages of its operation whole shifts changed at 7 A.M., 3 P.M. and 11 P.M. With expansion of employment as the plant swings into full production each of these shifts is being broken into three parts at 2-hour intervals so as to make shift changes occur at 5, 7 and 9 A.M.; 1, 3 and 5 P.M.; and 9, 11 P.M. and 1 A.M. Bus service supplied by the Twin City Rapid Transit Company and specialized on serving the plant is thus put on a 2-hour schedule around the clock.

The situation at some of the great airplane plants, particularly those in southern California, present problems involving the private automobile to a larger degree. In certain plants 90 to 95 per cent of the employees come to work in private automobiles. Obviously, with the present shortage of buses, provision of bus transportation to handle the full load as tires fail would not be practical. The solution is being sought by intensive development of group riding, which has now brought the average occupants per car up to between four and five in some plants.

Another type of staggered-hour problem is that of two or more large war-production plants located close together. An early example of this was found in the Western Electric and Federal Shipbuilding Company plants at Kearney, N. J. Originally, with the same opening hours, these two plants, each having 20,000 employees, found automobile congestion intolerable on the single street which all had to use. Moving up the opening hour of one of the plants by one-half hour provided the solution. Now, as more and more traffic is shifting from private passenger cars to buses, a further half-hour shift between the opening hours of the two plants is reported to be needed to give a wide enough spread for the same buses to serve in succession the workers of both companies.

Similarly, the Boeing airplane plant in Seattle advanced its shift change hours in order to avoid conflict of its day shift with other industrial and commercial traffic.

In many industrial communities, especially some of the New England mill towns where workers depend considerably on public transportation, there is extensive interplant staggering of work hours. In one city, for example, different mills open at 6, 7 and 8 A.M. In a few cases the needed results are attained by interplant staggering of several plants, each within itself, usually by departments.

In the staggering of work hours of a whole community or whole industrial or business area there are a number of measures which, if not already in effect, appear to be applicable in most cases. These include (a) in multi-shift plants setting the hour of the morning shift change earlier than the beginning hours of other groups of workers; (b) making next in order the openings of single-shift plants; (c) following these with the offices; (d) putting high-school hours thirty minutes or more later where necessary to avoid conflict with late factory and office hours; and (e) giving large retail stores the latest opening and latest closing hours of all types of establishments. Reports indicate that very little business is lost by the deferment of store opening hours, whereas the later closing hours are beneficial in allowing late afternoon shopping on the part of workers from factories and offices.

The best test as to whether staggered hours are needed is the capacity of the public transportation to handle existing or prospective demands. If it is inadequate to the task, or threatens to become so, then the first recourse should be to staggering of hours so as to spread the traffic peaks and permit transit vehicles to make more round trips during morning and afternoon rush hours.

Other expedients to meet transit stringencies, such as removal of standee restrictions, increasing the distances between stops, adaptation of traffic signals to allow more rapid movement practicable under the changed conditions, and so forth, should likewise be put into effect.

Group Riding: The other technical problem deserving special mention is in the newer part of the program brought about by the rubber situation, commonly referred to as "group riding."

Success of this part of the conservation campaign will depend largely upon action by business organizations and individual companies. They can promote reduction of unnecessary automobile use through educational programs directed both to employees and the general public. To develop joint use of automobiles, however, experience shows that general appeals to the public, while essential to the building up of popular understanding of the needs, do not alone bring large results. The plan must be organized chiefly through arrangements set up by business concerns to assist and stimulate employees to get together in "club ride" groups.

Neighborhood efforts will be of supplementary value, particularly in developing group riding among elements of the population dependent on automobile transportation but not employed in large establishments.

There is, however, as yet apparently little progress in the development of group riding. Counts reported still generally show average car occupancy about 1.7 persons.

Digest of an address by Alvin B. Barber, Manager, Transportation and Communication Department, Chamber of Commerce of the United States, before Eighth Regional Safety Conference, Philadelphia, Chamber of Commerce, May 27, 1942.

PRIORITIES AND THE USE OF SUBSTITUTE MATERIALS IN TRAFFIC SIGNALS

by K. W. MACKALL

EARLY in 1941, when the Office of Production Management refused to permit the use of new aluminum in traffic signals, the Traffic Signalling Section of the National Electrical Manufacturers Association foresaw the acute shortages of certain critical materials used in the manufacture of signals and controllers; and as a result, took joint action to place its needs before the Office of Production Management. A brief was submitted first to Mr. Edward W. Stettinius of OPM and later to Mr. Donald M. Nelson, setting forth the necessity of signals for moving traffic under wartime conditions. Much data on the amount of materials required was gathered and submitted. The data pertained not only to aluminum but to all other critical materials such as copper, brass, bronze, rubber, etc.

At the beginning of 1942 the Government set up what is known as the Production Requirements Plan, which is designed to permit manufacturers engaged in war and defense work to obtain the necessary materials to fill current orders. In brief, this plan is designed to permit manufacturers to replace stocks of critical material previously used in filling war and defense orders.

In submitting requests to the War Production Board for priorities on traffic signals and controls, complete information should be submitted with Form PD-1A and in every case a map of the city should be submitted, showing the locations at which the signals are to be installed, State and Federal highway routes through the city, the locations of plants engaged in war and defense work, traffic counts, and, in fact, all data which the city uses as a warrant for the installation of signal material at the intersection.

It cannot be emphasized too strongly the need for complete data because the men who ultimately decide whether or not the priority is to be granted have only the application and accompanying data to work from.

The use of certain materials is entirely prohibited in the manufacture of traffic signals and controllers. Aluminum is entirely prohibited. Brass, bronze, and copper are prohibited except for current carrying purposes. Rubber is prohibited except as insulation for electrical conductors, and only permitted then when no substitute can be found.

Prior to the war, all traffic signals were made of aluminum, either die-cast or sand cast, and the manufacturers faced a very difficult problem in obtaining suitable substitutes. Only a very few materials can be die-cast, these being primarily aluminum, zinc, and lead, and the first substitution made by the traffic signal manufacturers has been the use of die-cast zinc in place of die-cast aluminum, and this has proven a good substitute because the same dies may be used, and if the proper zinc base alloy is used, the zinc signal is equally as good as the aluminum for most signal work. The disadvantage of zinc is its weight. A one-way, three-section signal will weigh fifteen pounds more in die-cast zinc than it would in die-cast aluminum. This increase in weight is of no great importance except in the case of four-way, three-section adjustable signals for either span wire or mast arm mounting.

Some manufacturers have substituted drawn-steel bodies with die-cast zinc doors in place of regular aluminum and the drawn-steel body will be somewhat lighter in weight than the die-cast zinc.

For those parts of traffic signals and controllers which were formerly made of sand cast aluminum, it will be necessary to substitute either sand cast iron, or sand cast zinc with a resultant increase in the weight of the signal; which again, is only important in the case of span wire and mast arm mounted signals.

Controller cabinets in the future will be made of cast iron. There is very little difference in weight between sand cast iron and sand cast zinc and the cost of the zinc for cabinet work is prohibitive.

Prior to the war, a great many cities had standardized upon the use of Alzak reflectors in place of glass, and since no sheet aluminum is available for traffic signal reflectors those cities must return to the use of glass reflectors.

There are many individual items such as ball bearings for timers which are unobtainable without high priority rating, and while these bearings are made of steel, their use is nevertheless severely restricted, because so many ball bearings which were formerly available to the industry are now being consumed in the manufacture of planes.

It is very difficult to obtain the necessary brass for timer gears, and in saving of this material city and state authorities can be of great help in reducing the number of gears per timer. It has been the custom of manufacturers to supply five gears with each timer with the result that most cities have, in controller housings and in repair shops, many unused gears and a search would probably reveal hundreds of unused gears which are available for additional timers. In the majority of cases city authorities know that a timer for a given intersection is to operate on one, or at the most, two different time cycles, and these gears only should be ordered. There are probably thousands of 50, 70, and 80 second gears in city storehouses which are not being used and these gears can all be recut to gears providing shorter time cycles.

These gears should be collected and sold back to the manufacturer which originally supplied them so that they may be recut to more useful ones.

One of the greatest problems facing cities is obtaining copper in the form of insulated wire for interconnected traffic signal systems. Such wire is extremely difficult to get because two vital materials; namely, copper and rubber, are required for its manufacture, and unless the city has an extremely good case for the War Production Board, interconnecting cable will not be available. Therefore, it would seem advisable for most cities to abandon at this time all thought of a cable interconnected system, and as a substitute, cities should install either non-interconnected, or future interconnected synchronous motor driven controls which will keep in step with the frequency of the supply circuit. Such controls will have to be turned on or off by means of time switches or by policemen, or the signals will have to be operated twenty-four hours a day. Such a signal installation increases the difficulty of blackout, since the signals must be turned off by hand in case of an air raid.

Condensed from an address by K. W. Mackall (Mem. I.T.E.), Manager, Traffic Signal Department, Crouse-Hinds Company, Syracuse, New York, presented before the Midwest Safety Conference, Chicago, Illinois, May, 1942.

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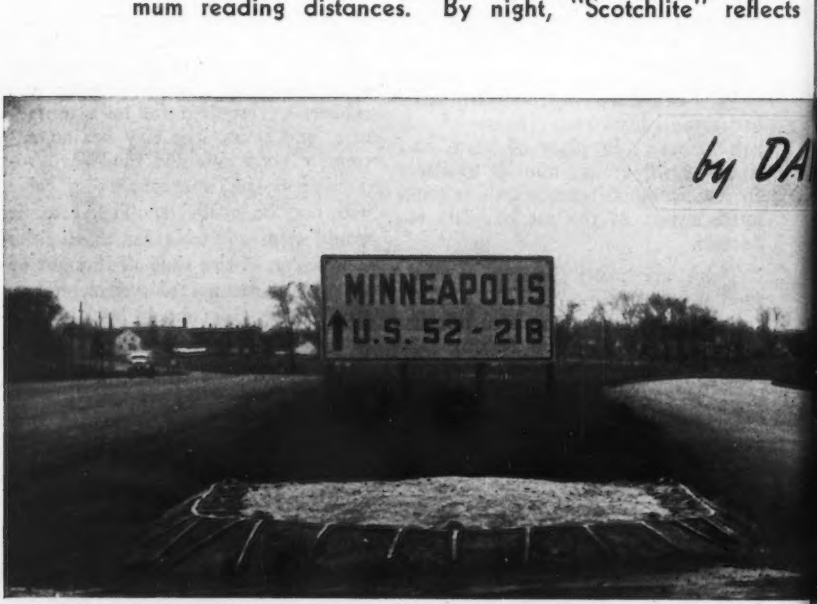

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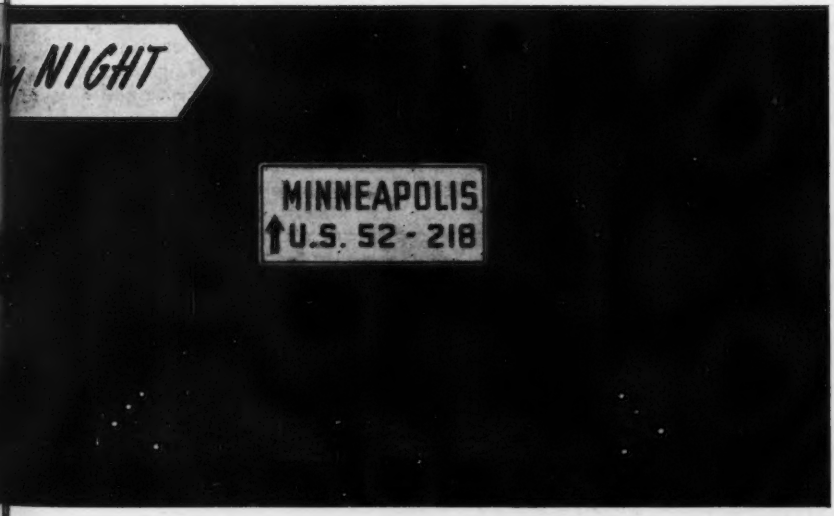

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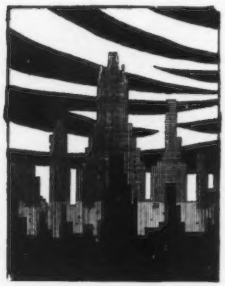


Stop, Look and Listen

PERSONALS

William S. Canning (Mem. I.T.E.), Engineering Director of the Keystone Automobile Club in Philadelphia, Pennsylvania has been commissioned in the U. S. Army with the rank of Major and is assigned to the Philadelphia Ordnance District with the responsibility for solving major traffic and transportation problems of his district.

Major Canning's experience and accomplishments serving as Highway Maintenance Engineer in Kentucky, Georgia and Pennsylvania, as Engineering Director of the Keystone Auto Club and as a Traffic and Transportation Consultant are well known in engineering circles. Major Canning also brings to his army post a knowledge of law, having been licensed to practice in Kentucky, and an ability in framing traffic regulations, having written many parts of the Vehicle Code of Pennsylvania.

Philip S. Mancini (Assoc. I.T.E.) has been appointed to the position of Public Service Engineer of Providence, R. I. Mr. Mancini takes over the offices formerly held by the late Ralph W. Eaton, including the office of Traffic Engineer, Smoke Inspector, Supervisor of Electrical Codes and Inspector of Electrical Wiring within buildings. Mr. Mancini served under Mr. Eaton as Deputy Public Service Engineer since June 1937.

Mr. Lloyd M. Braff (Assoc. I.T.E.) joined the Traffic Engineering Department of Detroit on September 1, as Assistant Traffic Engineer. His new duties will include special studies of traffic problems created by the intense production activity of the "Arsenal to the World." Mr. Braff, a graduate of North Dakota University, started with the Chicago Surface Lines in 1936. After his training course, he became Assistant Traffic Engineer, a position he held until accepting the opening in Detroit.

Virden A. Rittgers (Mem. I.T.E.), City Traffic Engineer, Richmond, Virginia, reports he is now working on a full-time assignment making studies and preparing a city-wide War Transportation Plan for the Richmond War Transportation Administrator.

LOOKING AHEAD

October 14-15
American Society of Civil Engineers, Fall Meeting: Hotel Brock, Niagara Falls, Ontario.

October 18-21
American Public Works Association, Cleveland, Ohio.

October 25-27
Institute of Traffic Engineers, Sherman Hotel, Chicago, Illinois.

October 27-29
National Safety Council, Chicago, Illinois.

SAVE THE STEEL FOR VICTORY

REHABILITATE YOUR OLD SIGNS

USE AMERICAN'S NEW REFLECTORIZED SIGN FILM

QUICK EASY APPLICATION IN YOUR OWN SIGN SHOP

STOCK SHEETS AVAILABLE AT LOW COST

"American" sign-finishing film is extremely flexible for mounting over embossed or debossed lettering or onto flat signs. It is furnished in sheet form to various State, County and City highway departments for sign rehabilitation use in convenient 24" x 24" sheet size. Stock colors are white and lemon yellow.

Your sign or paint shop can effect definite savings in time and money through the use of this luminescent sign film. Lettering or designations may be applied to the blank material in your sign shop by using a rubber coating device on embossed signs, silk screening or stenciling on flat signs. In using convenient stock sheets, your paint shop workers may cut odd sizes from sheets, thereby utilizing the greatest possible area of each sheet. On large runs, lettering may be secured on the sign film to your special order.

Write now for samples, prices, and full information on how to rehabilitate your old signs. Black screen lacquer, white or yellow spray enamel, metal primer and rollers are carried in stock.

AMERICAN DECALCOMANIA COMPANY, INC.
4334 WEST FIFTH AVENUE **CHICAGO, ILLINOIS**

APPLICATIONS FOR TRANSFER TO A HIGHER GRADE IN MEMBERSHIP IN I.T.E.

HENRY W. OSBORNE
Traffic Advisor, Board of Safety, City of Buffalo, New York, 1801 City Hall.
(Home) 723 Crescent Avenue, Buffalo, New York

APPLICATIONS FOR MEMBERSHIP IN I.T.E.

RONALD K. McGILLIVRAY
Planning and Traffic Engineer, Traffic Engineering Department, City of Bay City, Bay City, Michigan

WILLIAM J. WELLER
Assistant Traffic Engineer, City of Portland, Oregon
(Home) 4000 S. W. Condor Avenue, Portland, Oregon

A. WALLACE GOVE
Traffic Engineer, Department of Public Works, City Hall, Worcester, Massachusetts
(Home) Boyden Road, Holden, Massachusetts

KARL ALTEN BEVINS
1072 West Peachtree Street, Atlanta, Georgia

FREDERICK M. SPAUGH
2169 Grand Boulevard, Schenectady, New York.

RICHARD W. WILCOX
District Manager, Automatic Signal Corporation, 2443 Pickwick Road, Baltimore, Maryland.

POST WAR PLANNING

New York City Plan Commission has listed $628,000,000 for post-war construction projects. Now New York State has established a Post-war Public Works Planning Commission and are providing $450,000 for preparation of plans and administrative work. $50,000 has already been appropriated from a special fund for drawing plans for a vehicular tunnel from Staten Island to Brooklyn.

Public Works News Letter, May, 1942

EVACUATION ROUTES

William C. Brandes (Mem. I.T.E.), Traffic Signal Engineer, Chicago, Illinois, in a speech recently before the Midwest Safety Conference said in part:

In London one and one half million people were evacuated in 3 to 4 days, principally by railroads and buses. Railroads have advantages of starting at the city center, using no rubber and moving with safety both day and night; whereas evacuation by private automobiles uses much rubber and would necessitate movement in convoy probably controlled by the military.

Should over-the-road movement be decided, then the public must be fully acquainted with the evacuation routes and these should be selected with a minimum of crossings with other evacuation or military routes.

Evacuation plans should be prepared for areas and cities containing military objectives. Reception areas will usually be rural and suburban areas sparsely settled. In some cases forest and other large reservations serve as ideal reception centers.

Great care should be exercised to keep voluntary and hysterical evacuations to a minimum. Emergency tests from gassed or "time bombed" areas will prove effective in accomplishing this.

The groups generally listed for evacuation constitute 30% of the total population and consist of school children and teachers, pre-school children and their mothers, the infirm, blind, crippled, etc. and inmates of institutions and their attendants.

Complete evacuation plans for whole communities are prepared only in case of invasion.

In any case evacuation is one of the greatest civilian defense problems and one of the most effective in which traffic engineering training and experience are indispensible.

INDIANA TRAVEL TIME STUDY

A Proclamation issued March 19, 1942 by Governor Henry F. Schricker called on all Indiana motorists to voluntarily set for themselves a speed limit not to exceed 45 miles per hour where the speed is not otherwise restricted to a lower limit. In an effort to determine the actual time difference between cars using this "Economy Speed" and those traveling at a 60 M.P.H. maximum the Traffic Department of the State Highway Commission of Indiana undertook a Travel Time Study on the major state routes.

Four routes were selected, each beginning and ending at the State House, Indianapolis and time checked to predetermined points within other cities. The drivers of test cars were instructed to obey all legal speed zones and other legal restrictions such as "No Passing Zones" and "Stop" signs. Two cars operated as a team, under identical conditions. Two trips were made over each route on a week day; one car maintaining so far as traffic, weather and legal restrictions permitted, a top speed of 60 miles per hour, the other observing the same rules and maintaining a top speed of 45 miles per hour. Two similar trips were made again over each route by a different team on Saturday to determine variations between week day and Saturday traffic.

In all, 2547.2 miles were driven at each speed for a total of 4094.4 miles for the entire study. Saturday speeds were higher than on week days, due in part, no doubt, to fewer Commercial Vehicles on Saturday. The spread in averages for the 60 M.P.H. cars is much greater than that of the 45 M.P.H. cars, being 5.22 for the former and 1.84 for the latter. On some roads the 45 M.P.H. car was overtaken and passed by numerous cars while on other roads such passing was infrequent.

The average time difference over total mileage driven is 23 minutes for each 100 miles of travel. This difference is believed to be perhaps the maximum for vehicles using these speeds.

Submitted by Hallie Myers

CAR SPEED AND TIRE LIFE

A tire with 10,000 miles of normal driving left will give 14,000 vehicle miles of service if the car is driven at 35 miles an hour according to investigations made at Iowa Engineering Experiment Stations.

ORGANIZATION FOR CONSERVATION

Edgar F. Copell (Mem. I.T.E.) reports, as Executive Secretary of the Massachusetts War Transportation Committee, that local administrators have been placed in charge of conservation programs in 310 out of 351 cities and towns in the state. 73 of the 78 towns with 10,000 or more population are organized.

WALK TO WORK IN VIRGINIA

While 5,300 workmen walk up to 2 miles to and from Newport News shipyard and Norfolk navy yard, 4,000 living within 2 miles came by automobile and more than 5,000 come by bus and street car. A saving of an estimated 1,300 automobiles and 75 buses and street cars could be made if all the workers living within 2 miles walked, according to findings of the planning-survey unit of the Virginia Department of Highways.

CAR CONSERVATION IN GERMANY

Investigations are now made by local controllers in Germany to see whether the continued use of a private motor car can be justified. Cars may not be used for journeys between the man's home and place of work, for journeys of more than 75 kilometers (46.6 mi.) or on Sundays and holidays. Severe restrictions were recently placed on the use of motor cars by the Army, the National Socialist party and the Administration by a special decree of Hitler.

"Modern Transport," April 4, 1942

DO YOU KNOW

In Texas 300 billboards will be displayed reading "Be a REAL American. DRIVE UNDER 40. Save Life, Rubber, Fuel, and your Car."

With a much smaller traffic flow this May than a year ago, night traffic fatalities in New York City were five times as great. Lighting experts are studying this increase in relation to the "dim-out" in eastern coastal regions.

TRAFFIC ENGINEERING was the five hundred and first magazine to place the flag on its cover.

Passenger service of both buses and railroads is about 50 per cent more this year than in 1941.

80 per cent of all motor vehicle mileage upon the roads and streets of the United States is normally run off by passenger cars.

6,368 miles of Federal-Aid highway projects costing $188,253,089 have been completed during the current fiscal year ending May 31.

The British Ministry of Supply is reported to be considering plans for requisitioning tires on cars out of service due to other wartime restrictions.

40 per cent of the tires now being used to carry industrial workers in West Virginia to and from their jobs will be worn out within the next 3,000 miles of use.

Auto floormats are not good for tire retreading.

The Kansas City Star reports voluntary car pooling is showing up in clear figures.

Officials of Bridgeport and outlying towns have decided to put into effect a program of staggered hours.

Charlotte, N. C. has passed an ordinance prohibiting any person from placing, leaving or throwing glass on its city streets.

Montgomery, Alabama plans to stagger pay days in an effort to replace sudden masses of shoppers by a steady flow throughout the week.

Federal-State Highway planning survey organizations are now available for traffic engineering work, according to the Director of the Highway Traffic Advisory Committee to the War Department.

W.P.B. officials are considering a speedometer-checking plan to ration vehicle mileage.

The Massachusetts State Planning Board is advocating "fringe parking lots" where cars can converge en route to the plant and riders can double up from there on.

U. S. Public Roads Administration, O.C.D. and officials of Hebron, Ohio are cooperating in tests to determine the proper road markings — center lines, railroad crossing markings, guard rail reflectorization and other traffic devices under dim-out and blackout conditions.

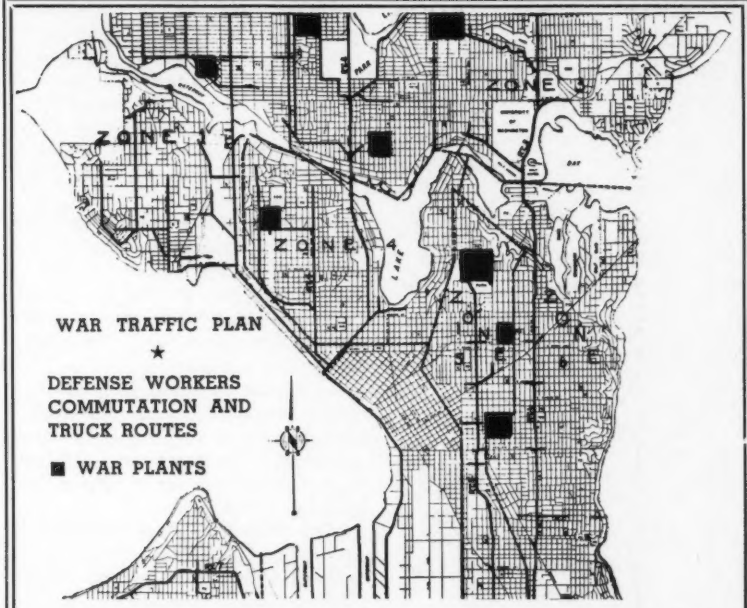
A 4" wide broken line in alternate 50 foot sections costs the Virginia Road Commission $6.60 per mile whereas the cost of a solid single line is $10.00 and a solid double 4" line is $16.60 per mile, reports a Roads and Streets recent issue.

New alternate specifications for traffic line paint, which eliminate the use of titanium dioxide and tung oil, were recently recommended to OPM for approval by a technical subcommittee of the coatings industry.

In Britain local authorities are permitted by the Ministry of Transport to put out traffic lights at points where traffic conditions have changed and traffic lights are no longer necessary, as long as these lights are marked with a white cross.

In Britain the Ministry of Food has worked out schemes for the exchange of customers by milk men to reduce the area covered by each.

Road accidents in Great Britain. During January 681 people were killed compared with 741 in January 1941. During March 550 were killed compared with 836 in March 1941.



TRAFFIC SIGNALS AID WAR EFFORT

Municipal and traffic engineers today can do much to aid the war program in their communities. Many of them are doing so. The smooth, safe flow of traffic in war or defense areas was never more important than now.

WAR PLANTS require free movement of men and materials.

WAR PRODUCTION BOARDS recognize the need for traffic signals in war areas and have granted required priorities.

COUNCILS OF CIVILIAN DEFENSE require **emergency** traffic to move during blackouts and permit **all** traffic movement during dim-outs.

EAGLE SIGNAL CORPORATION can provide you with proper blackout and dim-out traffic controls and new traffic signal equipment for war areas.

There is no need or requirement for destroying the effectiveness of traffic signaling systems during peak loads in order to comply with government blackout or dim-out regulations.

Eagle equipment solves both problems.

Eagle Signal Corporation is always ready to assist municipal and traffic engineers. Consult them without obligation.

Invest in Liberty by Buying War Bonds

EAGLE SIGNAL CORPORATION

MOLINE ILLINOIS

ODT PUBLIC TRANSPORTATION POLICY

The O.D.T. recently issued a 12-point policy to local public transportation companies stating in essence that transit operators should: encourage development and participate in the preparation of plans for staggering hours of industry, business and schools, discontinue use of bus and trolley coach services on routes where street railways can handle the traffic and to alter schedules and routes to divert passengers to street railway routes, eliminate unnecessary service to outlying districts, adopt standard passenger stops at distances of 660 feet to 1,200 feet, modify schedules for buses and trolley coaches during non-rush hours to carry at least full-seated loads, inaugurate new routes and extend existing bus routes only to places where failure to provide such additional service will have a definite unfavorable effect on the war effort, provide charter bus service only where it is necessary service, urge the revision of traffic regulations and controls to give precedence to the movement of mass carriers rather than to automobiles, lessen stop-over time at terminals and speed up schedules as traffic congestion is lessened, and obtain the use of parkways where substantial savings in mileage, time and rubber can be made if road conditions can withstand the traffic.

NEEDED FOR CIVILIAN WAR SERVICE

Transportation Analysts: Salaries: $2,000 to $5,600 per annum to conduct economic research in the field of Transportation and prepare reports of the results. Applicants must have had experience in research and analysis in the field of transportation and should apply to J. C. Hathcock, Economic and Statistics Unit, U. S. Civil Service Commission, Washington, D. C.

BEFORE AND AFTER GASOLINE RATIONING

A comparative study of the work of the Transportation Committees in 41 industries with approximately 14,000 employees in the City of Providence on tire and gasoline conservation before and after the July rationing shows:

350 fewer cars are being used; the number of persons per car has increased from an average of 2.05 to 2.25 persons per car; and the greatest increase in load factor was in a firm with 152 employees rising from 2.0 to 6.0 persons per car.

Providence now has 54 firms with a load factor of 2.0 or more with 5 of these firms having a load factor of 4 or more persons per car. 127 firms have answered out of a total of 350 firms contacted to date.

DO YOU WANT A RIDE OR RIDERS?

When Henry W. Osborne (Assoc. I.T.E.), Traffic Engineer of Buffalo, N. Y., discovered that the vehicles transporting workers to one of their large industries were being used to less than half the carrying capacity, he persuaded the management to issue a questionnaire which pointedly asked the workers, "Do you want a ride?" and "Will you take passengers?" His investigation disclosed that 17 per cent of the workers wanted rides, and 23 per cent wanted passengers. Wanting rides were matched with wanting riders with the result that 700 cars have been conserved and 27% of the vehicles enter and leave the plant instead of 39 per cent as before.

DO YOU KNOW

A Brookings Institute publication concludes that civilian economy will be disrupted if the pool of passenger cars is permitted to drop below 20 million and that the requisitioning of several million vehicles during 1942 may be necessary to maintain essential automotive transportation.

SAME MILEAGE WITH LESS GAS

Reasoning that conservation should be practiced in every form during wartime, Sun Oil engineers have made public the following simple changes to obtain the maximum of mileage with the minimum of gasoline.

Remove valve lifters from every other cylinder.

Pinch together the points on spark plugs.

Cut flow of gasoline by adjusting carburetor.

Tests reveal that the best speed range in the popular makes is between 30-35 miles per hour. One car ran 36 miles on a gallon of gasoline.

Intelligent public education can now combine conservation of gasoline and tires by showing that while the motorist drives fewer miles to save his tires, he also can accomplish this same minimum mileage with less gasoline and can travel at a reasonable rate of speed, thus increasing the opportunity to save gasoline without increasing his exposure and maybe disabling a worker vital to victory.

TIRE "SANDAL"

U. S. Rubber Company plans production immediately of a tire "sandal" made of woven cotton treated with asphalt emulsion. It fits over the tread and has flaps which fit under the rim and is expected to add from 2500 to 3000 miles to the life of a tire.

CENTRAL TRAVEL BUREAU

The State of New Hampshire has established a central travel bureau for state officials and employees. Its duties are as follows:

1. Assign state-owned vehicles for various departments.
2. Assign passengers to the privately-owned cars which have been placed at the disposal of the state.
3. Keep auto-use mileage records.
4. Approve all mileage payments.
5. Apportion mileage.
6. Furnish common carrier schedules.

CAR-SHARING CAMPAIGN MATERIAL

The Office of Civilian Defense in Washington, D. C., has distributed to Local Defense Councils in the East information material for the development of local car sharing campaigns. The material contains a factual analysis, suggested speeches, radio scripts, etc. (Free)

"LET'S RIDE TOGETHER"

The Automotive Safety Foundation's Conservation Information Bulletin No. 2 in five brief messages:—Ride Together, Slow Down, Eliminate Unnecessary Driving, Conserve Through Maintenance and Watch Your Driving—summarizes this problem of vehicle conservation and presents it in ideal form for distribution at industrial plants.

TRAFFIC VOLUME TRENDS

Preliminary traffic data for June, 1942 from recorders located in 15 states indicates a decrease of 30.7 per cent as compared with traffic for June, 1941. Traffic decreases within states where gasoline is rationed were 38.5 per cent. Data from 17 toll facilities in or near urban areas in the rationed area, continues the Public Roads Administration Informational Memorandum No. 14, dated August 14, 1942, show a 27.9 per cent decrease in total in June, as compared with the volume in June, 1941. On these facilities the decrease in passenger car traffic compared to that of the previous year was 31.6 per cent, while truck and bus traffic increased 1.2 per cent.

"LOW BEAM—DIMOUT" SPEEDS

Massachusetts has established a maximum speed limit of 15 miles an hour for "dim out areas" and 30 miles an hour for "low beam areas." Most of eastern Massachusetts is now "low beam" territory with much of this "dim out."

48″ Panel 24″ Panel

DAY NIGHT

MEETING the EMERGENCY

Reflector Signs now easily made with "REFLECTO-CHAIN"

FOR BLACKOUTS
Available in luminous finish to reflect *with* light and glow *without* light —a recent foreign development.

"REFLECTO-CHAIN" *is the quick solution to the emergency created by the shortage of steel.* The answer to Defense restrictions. It can be readily applied to metal, however it is even more easily attached to *Wood* or *Plywood.* Flexible as a string. Any size or style of letter, figure or symbol, can be formed and easily mounted by means of its special screws or nails. If required, it can be furnished to function with complete invisibility from overhead, and, without impairing its horizontal effectiveness. Old or new signs, of any size and type, can be quickly and inexpensively converted into Reflector Signs by using "REFLECTO-CHAIN." The treatment can be with single, double or triple rows of buttons, also by designs, (note illustration) and with different reflecting colors. Write for descriptive literature and prices "Reflecto-Chain" and also Reflector Pavement Markers. Send for trial shipment today.

Manufactured under U. S. Patents Numbers 2,240,777; 2,113,759.

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